CLAIMS:

1. A voltage regulating circuit comprising a rectifier (2) for receiving an AC voltage (v_{mains}) and for generating a rectified AC voltage (v_{rec}), and a capacitor (3) connected in parallel with said rectified AC voltage for providing a DC voltage (v_{DC}) over a load (5), characterized by a unidirectional current switch (4) provided between the rectifier (2) and the capacitor (3), and a control block (6) arranged to activate the switch (4) at selected instances (7) during negative slopes of the rectified AC voltage (v_{rec}) so that said DC voltage (v_{DC}) does not exceed a predetermined voltage limit (v_{lim}).

2. A voltage regulating circuit according to claim 1, wherein said control block (6) is arranged to receive the AC voltage (v_{mains}) or the rectified AC voltage (v_{rec}), and the voltage over the load (v_{DC}), in order to control the switch based on these voltage levels.

3. A voltage regulating circuit according to claim 2, wherein the control block comprises:

means (11, 13) for generating a scaled version (14) of the rectified AC voltage (v_{rec}),

means (16) for generating a scaled version (17) of the load voltage (v_{DC}),

means (18) for generating a compensation signal (19), by integrating a difference between a reference voltage (v_{ref}) and said scaled load voltage (17),

means (20) for comparing said compensating signal (19) and said scaled rectified AC voltage (14), and

means (22, 24, 25, 26) for activating said switch (4) each time the scaled rectified AC voltage (14) falls below said compensating signal (19).

4. A voltage regulating circuit according to claim 3, wherein said means (11, 13, 16) for generating scaled versions of the rectified mains and the load voltage comprise one or several operational amplifiers.

5. A voltage regulating circuit according to claim 3, wherein said means (18) for generating a compensating signal comprise a proportional-integrator.

6. A voltage regulating circuit according to any one of the preceding claims, wherein said rectifier (2) is a diode bridge rectifier.

7. A voltage regulating circuit according to any one of the preceding claims, wherein said unidirectional current switch (4) is a thyristor.